

CLAIMS

1. A method of forming a wheel rim hump portion (H) along a circumferential direction on an outer circumferential wall surface of a vehicular wheel rim (W) gripped by gripping means (14), comprising the steps of:

supporting said vehicular wheel rim (W) from the outer circumferential wall surface thereof with a first die (106) having a recess (108), and pressing said vehicular wheel rim (W) from an inner circumferential wall surface thereof with a ridge (170) disposed on a second die coupled to a rotational shaft (136) at a position corresponding to said recess (108) to raise the outer circumferential wall surface of said vehicular wheel rim (W); and

rotating said rotational shaft (136) to displace said ridge (170) along the circumferential direction on the inner circumferential wall surface of said vehicular wheel rim (W), thereby raising said outer circumferential wall surface along the circumferential direction to form a hump portion (H).

2. A method according to claim 1, wherein said first die (106) has another recess (110) different from said recess (108), and when said vehicular wheel rim (W) is supported from said outer circumferential wall surface thereof, a curled portion (C1, C2) on an end of said vehicular wheel rim (W) is accommodated and supported in

said other recess (110).

3. A method according to claim 1, wherein a roller (124) having said ridge (170) projecting from a side circumferential wall thereof is used as said second die.

4. A method according to claim 1, wherein two individually movable plates (16a, 16b) are provided on said first die (106), further comprising the steps of placing said vehicular wheel rim (W) on a placement table (12) while said first die (106) is being open, closing one of said movable plates (16b) on said first die (106), and thereafter closing the remaining movable plate (16a) to close said first die (106) for thereby supporting the outer circumferential wall surface of said vehicular wheel rim (W) to form said hump portion (H).

5. A method according to claim 1, further comprising the step of holding a support member (160) in abutment against an end face of said curled portion (C1, C2) in forming said hump portion (H).

6. An apparatus (10) for forming a wheel rim hump portion (H) along a circumferential direction on an outer circumferential wall surface of a vehicular wheel rim (W) gripped by gripping means (14), comprising:

a placement table (12) for placing said vehicular wheel

rim (W) thereon;

a first die (106) having a recess (108), for supporting said vehicular wheel rim (W) from an outer circumferential surface thereof;

5 a second die coupled to a rotational shaft (136) and having a ridge (170) at a position corresponding to said recess (108); and

rotating means (146) for rotating said rotational shaft (136);

10 wherein said vehicular wheel rim (W) is pressed from an inner circumferential wall surface thereof with said ridge (170) of said second die, and plastically deformed material of said vehicular wheel rim (W) is caused to enter said recess (108) of said first die (106) to raise said outer circumferential wall surface of said vehicular wheel rim (W); and

15 wherein said rotational shaft (136) is rotated to displace said ridge (170) along the circumferential direction on the inner circumferential wall surface of said vehicular wheel rim (W), thereby raising said outer circumferential wall surface along the circumferential direction to form a hump portion (H).

20 7. An apparatus (10) according to claim 6, wherein said first die (106) has another recess (110) different from said recess (108), and when said vehicular wheel rim (W) is supported from said outer circumferential wall surface

thereof, a curled portion (C1, C2) on an end of said vehicular wheel rim (W) is supported in said other recess (110).

5 8. An apparatus (10) according to claim 6, wherein said second die comprises a roller (124) having said ridge (170) projecting from a side circumferential wall thereof.

10 9. An apparatus (10) according to claim 6, further comprising reversing means (36) for reversing said gripping means (14).

15 10. An apparatus (10) according to claim 6, wherein said first die (106) has two movable plates (16a, 16b) which are movable independently of each other, and after one of said movable plates (16b) of said first die (106) is closed, the remaining movable plate (16a) is closed to close said first die (106) for thereby supporting the outer circumferential wall surface of said vehicular wheel rim (W) which is placed on said placement table (12) while said first die (106) is being open, and then said hump portion (H) is formed.

20 11. An apparatus (10) according to claim 10, further comprising fixing means (118) for positioning and fixing said first die (106) which is closed.

12. An apparatus (10) according to claim 10, wherein a pressing force applied to said one of said movable plates (16a) is greater than a pressing force applied to said remaining movable plate (16b).

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13. An apparatus (10) according to claim 6, further comprising:

a support member (160) for supporting said curled portion (C1, C2) from an end face thereof; and

10 support member displacing means (162, 164) for displacing said support member (160);

wherein said support member (160) is held in abutment against the end face of said curled portion (C1, C2), and then said hump portion (H) is formed.

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